

Remarks

In view of the above amendments and the following remarks, reconsideration of the rejection and further examination are requested.

Claims 7, 9 and 11 have been cancelled without prejudice or disclaimer to the subject matter contained therein.

Claims 1-9 and 11-14 have been rejected under 35 U.S.C. §102(b) as being clearly anticipated by Sandhu (US 5,643,060).

Claims 1 and 8 have been amended so as to further distinguish the present invention, as recited therein, from Sandhu.

The above-mentioned rejection submitted to be inapplicable to pending claims for the following reasons.

Claim 1 is patentable over Sandhu, since claim 1 recites a substrate polishing apparatus including, in part:

an eddy current sensor for measuring a thickness of a film on a substrate, the eddy current sensor having a sensor coil to be arranged near the substrate and an AC signal source for supplying an alternative voltage to the sensor coil; and

a controller for controlling a polishing process for the substrate according to a predetermined polishing recipe, wherein the controller is configured to switch an oscillation frequency of the AC signal source from a first value to a second value based on a type of film determined from measuring results of the eddy current sensor. Sandhu fails to disclose or suggest the eddy current sensor and the controller recited in claim 1.

Sandhu discloses a polishing system 10 for polishing a wafer including a film thickness measuring device 60, a polishing head 100 and a controller 72. The measuring device 60 is a laser interferometer measuring apparatus which employs interference of light waves for purposes of measurement. The laser interferometer measuring apparatus includes light transmitter/receiver units 62 and a laser source and controller 64 which is optically coupled to the transmitter/receiver units 62. Further, the measuring device 60 can be implemented as a system for measuring a change in capacitance during wafer polishing, a device for detecting a change in friction at the wafer surface, and an acoustic mechanism for measuring wave propagation as material is removed during polishing.

The controller 72 works in conjunction with the film thickness measuring device 60 to determine polishing rates and uniformity across the wafer. Further, the controller 72 is capable of making independent adjustments to one or more pressure applicators 106 on the polishing head 100. (See column 7, lines 1-19 and column 8, lines 1-21).

Based on the above discussion, it is apparent that the measuring device 60 of Sandhu can be implemented as a laser interferometer measuring apparatus, a system for measuring a change in capacitance during wafer polishing, a device for detecting a change in friction at the wafer surface, and an acoustic mechanism for measuring wave propagation as material is removed during polishing. However, there is no disclosure or suggestion in Sandhu of utilizing an eddy current sensor as recited in claim 1.

Further, the controller 72 of Sandhu makes independent adjustments to the pressure applicators 106 of the polishing head 100 while polishing the wafer. However, Sandhu fails to disclose or suggest that the controller 72 switches an oscillation frequency of an AC signal source of an eddy current sensor from a first value to a second value based on a type of film determined from measuring results of the eddy current sensor. As a result, claim 1 is patentable over Sandhu.

As for claim 8, it is patentable over Sandhu for reasons similar to those set forth above in support of claim 1. That is, claim 8 recites, in part, measuring film thicknesses of a plurality of zones of a substrate by an eddy current sensor having a sensor coil arranged near the substrate and an AC signal source for supplying an alternating voltage to the sensor coil, the zones corresponding to respective chambers; and switching an oscillation frequency of the AC signal source from a first value to a second value based on a type of film determined from measuring results of the eddy current sensor, which features are not disclosed or suggested by Sandhu.

Because of the above-mentioned distinctions, it is believed clear that claims 1-6, 8 and 12-14 are allowable over the reference relied upon in the rejection. Furthermore, it is submitted that the distinctions are such that a person having ordinary skill in the art at the time of invention would not have been motivated to make any combination of the references of record in such a manner as to result in, or otherwise render obvious, the present invention as recited in claims 1-6, 8 and 12-14. Therefore, it is submitted that claims 1-6, 8 and 12-14 are clearly allowable over the prior art of record.

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance. The Examiner is invited to contact the undersigned by telephone if it is felt that there are issues remaining which must be resolved before allowance of the application.

Respectfully submitted,

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